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Abstract

In contrast to Robert Mundell's Optimum Currency Area theory and his recommendation of forming a monetary union, the economic fundamentals of Euro area member countries have not harmonized. The opposite holds: the Euro core countries - most of all Germany, but also the Netherlands and Finland - increased productivity growth while limiting nominal wage growth. However, Mediterranean countries - particularly Greece, but also Spain, Portugal, and Italy - have dramatically lost international competitiveness. Although the overall balance of payments for the Euro area at large is almost balanced, internal disequilibria are skyrocketing and default risk premiums and tensions within the Euro area are rising, thus jeopardizing the stability of the monetary union. The findings confirm that a common currency without fiscal union is inherently unstable. The international financial and economic crisis has merely triggered events which highlight this instability. The paper discusses three possible scenarios for the future of the Euro: a laissez faire approach, a bailout, and finally an exit strategy for the Mediterranean countries, or an organized exit by a group of core countries led by Germany, forming their own smaller monetary union.

Keywords: *Optimum currency areas, monetary union, risk spreads, central banking, exchange rates, fiscal policy.*

JEL codes: E42, E55, E63, F15, F33, F34

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I. Introduction

In the aftershock of the worldwide financial crisis one observes an interesting monetary coincidence: while an increasing number of countries accelerates its efforts to join the Euro area, several established Euro member countries have questioned whether they should remain part of the European Monetary Union.

The first group, represented by countries like Hungary or Poland, sees Euro membership as effective protection against abrupt outflows of capital, currency depreciation, and consequently rising levels of debt denominated in foreign currency. Accession to the Euro area would remove currency risk on existing currency mismatches in asset/liability positions, lower refinancing costs via a reduced risk premium, and allow for a higher sustainable rate of economic growth.

The second group includes current Euro member countries such as Greece, Italy, Portugal, and Spain. All these countries share a common history of inflation and devaluation before joining the Euro area. Upon entering the Euro area, refinancing costs for this group of countries with low quality currencies decreased significantly.³ However, against expectations of the theory of optimum currency areas, macroeconomic fundamentals within the Euro area have drifted more and more apart since the launch of the common currency. A core Euro area, headed by Germany, pursues an export-led growth strategy, while the Mediterranean fringe of euro member countries continues a dramatic loss in international competitiveness.

Accelerating trade integration within Western Europe after World War II has provoked an intensive debate about a common currency for over five decades.⁴ The plan for a common currency was formalized with the Dan Hague summit of 1969 and further specified in the Werner Report of 1970. Mundell's (1961) paper on Optimum Currency Areas provided the theoretical backbone and justification for a European Monetary Union.⁵

Contrary to the analysis of his mentor Meade and the emerging Chicago School, Mundell questions flexible exchange rates as the ideal international monetary arrangement to adjust to

³For Italia, as an example, by entering the euro area the cost of serving the national debt decreased by approximately 4 percent of GDP annually.

⁴See for example Meade, J.E. (1957), Scitovsky, T. (1958), and Mundell, R. (1997).

⁵See Mundell, R. (1961).

external shocks.⁶ In his paper Mundell distinguishes an optimum currency area (region) from a country: supply or demand shocks might affect specific industries located in a region that need not coincide with a sovereign country. Under such conditions, the exchange rate fails as an adjustment mechanism. Mundell argues that the effectiveness of flexible exchange rates as an adjustment mechanism depends on money illusion; wage earners are not compensated perfectly for the reduction of nominal earnings through the increase of import prices. Mundell criticizes models based on money illusion, which assume that market participants understand a market economy poorly and do not learn. Particularly small and open economies would face a more significant pass-through effect from a depreciation of the currency to the domestic price level. He also questions the stability of international price systems after taking speculative demands into account.⁷ And finally, size matters: the effects of external shocks on economic output will be smaller for larger currency areas.

Mundell strictly distinguishes a fixed exchange rate system from a pegging system. While the former directly links the balance of payments to the money supply, the latter allows continued financing of disequilibria, with the risk of ultimately breaking the peg. In contrast, a fixed exchange rate system, such as a gold standard or any other kind of credible arrangement, would - according to the rules of the game - not allow any form of sterilization.⁸ Countries with balance of payments surpluses would automatically inflate, while countries with balance of payment deficits, assuming sticky prices, would face higher unemployment and lower economic activity. Both forces at work would lead back to equilibrium.

Under flexible exchange rates the change in the nominal exchange rate should work towards equilibrium, substituting for factor mobility. Under a fixed regime internal adjustments are necessary. These adjustment processes are based on the international (or intra-regional) mobility of capital and labor, and similar economic structures amongst the regions (countries).

The European exchange rate system was stable from 1978, the inaugural year of the European Exchange Rate Mechanism, until 1987. However, the parity grid of fixed exchange rates

⁶See also Mundell, R. (1997).

⁷Mundell, R. (1961), p. 663.

⁸In reality, however, members of the gold standard did indeed violate the rules of the game in various ways. See for example Fratianni, Michele, and Andreas Hauskrecht (1998).

amongst its member states was not self-adjusting. Germany continued its export-oriented, mercantilist strategy, while the Mediterranean countries continued to rely on higher domestic absorption and easier monetary policy to drive their economies. The resulting shift in relative competitiveness had to be corrected through eleven realignments of the exchange rate grid. After several years without exchange rate realignments, the European exchange rate crisis of 1992 reflected the continued economic and monetary disparity within Europe.

The decision to form a European Monetary Union certainly followed not only economic, but also political considerations. A stable European currency could challenge the US-dollar as the dominant international currency. Europe did not completely satisfy the preconditions of an optimum currency area set out by Mundell; however, this was similarly true for the United States of America and the unified Italy when forming their respective monetary unions.⁹ New empirical evidence that monetary unions endogenously increase intra-regional trade was supportive.¹⁰ In other words, although Europe initially did not satisfy Mundell's preconditions for an optimal currency area, it might grow into one.

A decade after the euro was launched, results are mixed. The euro did grow into the role of an international currency, based on its internal and external stable value. However, fundamental disequilibria within the euro area have become more and more obvious. While a group of core countries such as Germany and the Netherlands further improved its competitive position, other countries, particularly the Mediterranean ones, fell drastically behind. The current world financial and economic crisis has aggravated the tensions within the European Monetary Union. Markets increasingly question if the monetary union is sustainable in its present form or if one or several countries will opt to leave the monetary union.

The remaining of the paper is structured as follows: in the next section we will analyze the rising heterogeneity in economic fundamentals within the European Monetary Union and discuss it in the context of Mundell's model. In the third section we will discuss three scenarios for the Mediterranean countries: I. *Laissez faire*: The market reacts to increasing disparity within the monetary union without monetary or financial bailout. II. *Bailout*: We differentiate between a pure financial (fiscal) and a monetary bailout. The latter obviously involves the

⁹See also Fratianni, M. and A. Hauskrecht (2002).

¹⁰See for example Frankel, J.A. and A.K. Rose (2002).

European Central Bank as important player. III. Exit Strategies: The third scenario discusses incentives and consequences for countries which might decide to leave the monetary union.

II. Rising economic disparity within the European Monetary Union

An optimum currency area under one monetary policy should produce similar rates of inflation for the entire area. Only minor regional deviation from the mean should occur, and only in the short term. Table 1 shows the compounded price level changes for all euro member countries since the introduction. It reveals a surprisingly diverse picture of inflation for the euro area since the year 2000. At the low end, Germany and Finland experienced around 17 percent of accumulated and compounded inflation (CPI) over 9 years; Greece had the highest inflation with almost 36 percent, followed by Spain and Portugal, while Italy with 24.9 percent stays below the mean of 28.5 percent.

Figure 1 reflects the change in economic competitiveness for the four Mediterranean euro member countries relative to Germany, measured in unit labor cost changes since 1991. Very similar to the inflation pattern, previously established convergence among member regions is lost after 2001/2. Table 2 plots unit labor costs from 2000 to 2008. While countries like Finland and Germany reduced unit labor costs, other countries, foremost Italy, increased unit labor costs by more than 40 percent. Consequently, the former group has improved its relative competitiveness of export industries, while the latter is falling behind.

Rising unit labor costs are the result of nominal wage increases above productivity gains in a given period. Table 3 shows the annual change in nominal wages of the Mediterranean countries. In the latter, particularly in Greece, nominal wage increases skyrocketed through 2009 with a staggering increase of almost 15 percent, followed by Italy and Spain with respectively 5.6 and 5.4 percent.

Figure 2 shows that productivity growth of the Mediterranean countries has systematically lagged behind the trend in Germany, with Greece showing the most drastic swings in annual productivity changes. The figure illustrates that the rising disparity in unit labor costs is fueled

by two sources, lower productivity growth and higher nominal wage increases in the Mediterranean countries. In other words, the Mediterranean countries distributed welfare gains that never existed to its workers.

The discussion above demonstrates that euro member regions have drifted apart significantly in their macroeconomic fundamentals. Without the exchange rate as an adjustment instrument, the only variable left is an adjustment of future wage levels. Given the stronger German productivity growth and modest wage increases, the Mediterranean countries face a very difficult task in regaining competitiveness both within the euro area and the rest of the world.

Table 4 starkly demonstrates the rising heterogeneity in international competitiveness within the euro area. Austria, Finland and Germany show a robust growth in exports relative to average export growth for the euro area, based on a decrease in real wage levels. The opposite is true for the Mediterranean countries: real wage increases coincide with weak export performance. The diverging export performance results in dramatic disparities in euro area member current accounts; the Mediterranean countries show significant and increasing current account deficits, lead by Greece with a deficit of close to 15 percent in 2008, followed by Portugal and Spain. Interestingly, although with similar losses in international competitiveness, Italy was able to keep its current account deficit around a modest 1 percent of GDP.

In sum, we see a dramatic deviation in the economic fundamentals of euro member countries that causes rising trade and current account imbalances, which contradicts the predictions of the optimum currency area literature.

Figure 3 plots the export performance from 1999-2006 on the horizontal axis and the change in the real exchange rate on the vertical axis, in both cases relative to the mean of all euro member countries. The first quadrant, in the graph represented by Ireland and the Netherlands, stands for rising exports, causing an upward trend in the price level. The fourth quadrant plots countries with rising exports coupled with a real depreciation towards the rest of the euro area, represented by Finland, Austria, and Germany. The second quadrant shows countries with a real appreciation of the exchange rate and a relative reduction in export performance, notably France, Greece, Portugal, and Spain. The second quadrant manifests the rising heterogeneity

within the monetary union: all countries in this quadrant experienced a real appreciation of the exchange rate (a decline in competitiveness) and export performance below the mean of the monetary union.

Until recently, strong capital inflows to the Mediterranean countries financed their imbalances relatively easy. Figure 4 shows very significant Foreign Direct Investments for Spain and Italy, while Greece depended more on international debt financing.

Agitated by the international financial crisis, capital markets increasingly have begun to price in rising default risk for the Mediterranean countries. Even before the Greek crisis, risk spreads for 10-year sovereign bonds increased significantly (see figures 5 and 6 in the appendix).

Macroeconomic fundamentals and rising disequilibria caused a market reaction, leading to higher refinancing costs for Mediterranean countries. This group of countries is therefore losing its biggest benefit of entering the euro area: financing costs close to the German benchmark.¹¹ Of course, increased financing costs affect each country to a different degree. In 2007 (before the financial crisis hit the markets), the savings-investment gap, and with it the current account deficit, for Italy was a modest 1 percent; it reached close to 9 percent for Portugal and Spain, and a remarkable 13.9 percent for Greece. Higher financing costs hit the latter countries hardest.

Ten years after its creation, the diagnosis for the euro is straightforward: diverging trends in productivity growth and nominal wage increases produce significant differences in unit labor costs amongst euro member countries. This heterogeneous development of economic competitiveness is reflected in current account balances. Germany, the Netherlands, Finland, and Austria realize significant surpluses in trade within the euro area and the rest of the world. Meanwhile, several other euro member countries, particularly the Mediterranean countries, produce trade deficits; Greece, Spain, and Portugal have produced dramatically high deficits.

Diverging real exchange rates, rising current account imbalances and international creditor/debtor positions are incompatible with a monetary union without a fiscal union, in particular a system of fiscal transfers to finance weaker regions. In the following section we discuss

¹¹We will discuss the composition of risk premia in default and currency spreads in section 3 of the paper.

three paths of adjustment for the euro area. We start with a laissez-faire assumption that would leave the burden of adjustment entirely to the deficit countries. This is followed by a bailout scenario, where the burden of adjustment is shared amongst the surplus and deficit countries of the euro area. The benefits of a monetary union without a fiscal union accrued in the form of low interest rates for weaker member countries. With risk premia re-emerging this does not hold anymore, the gains from being in the monetary union diminish, and exit strategies become relevant policy options.

III. Three scenarios for adjustment

a) Laissez-faire

A laissez-faire scenario is based on a credible non-bailout clause for euro member countries, as outlined in the Maastricht treaty. In this case, the Mediterranean countries unilaterally bear the costs of economic adjustment.

Since the introduction of the European Exchange Rate Mechanism (ERM), the Mediterranean countries have frequently devalued their domestic currencies against the DM, previously the regional key currency. Losses in competitiveness were compensated for by nominal exchange rate adjustments, implicitly confirming Keynes' notion that the exchange rate is a more effective instrument than direct changes in wage levels.¹²

Significant deviations in productivity growth in a monetary union are not uncommon and can also be observed for the United States (see figure 7). However, the main difference between the U.S. and the euro area is the degree of labor mobility, which is significantly higher in the U.S. The labor market in the euro area is still fragmented in national segments. The violation of one of the key pillars (labor mobility) of the optimum currency area theory haunts the euro area today (see tables 5 and 6).¹³

We offer two explanations for the low mobility of labor within the European monetary union. The first obstacle for labor mobility is obviously language barriers, complicating job

¹²It is worth noting that exactly this money illusion is one of the main reasons why Mundell questions the exchange rate as an adjustment instrument (Mundell 1961).

¹³Mundell knew about the relatively low labor mobility for Europe. It remains unclear why he thought a higher level of capital mobility could compensate for the absence of the former (see Mundell 1997).

search and employment in other euro member countries. The second explanation refers to the still fragmented social security systems amongst member countries of the monetary union. As long as it remains difficult (if not impossible) to switch between social security systems amongst member countries, and the social security schemes of the Mediterranean countries are generously designed, the labor force in these countries has little incentive to migrate into surplus countries. However, rising debt burdens will force this group of countries to reduce its debt burden and ongoing budget deficits, ultimately cutting back its social security benefits, and lowering the migration threshold. Consequently, a laissez-faire scenario may ultimately lead to massive labor migration from south to north within the monetary union, reducing the labor force in the south and putting pressure on labor markets in the north, most likely in low-skill labor market segments.¹⁴

Given the wide gap in macroeconomic fundamentals that occurred since the euro was launched, the Mediterranean countries will face a long and painful adjustment process. The best way to think about balance of payment problems in a monetary union is to apply the gold standard framework. A reduction in available capital will increase its cost, causing deflationary and recessionary pressure on the economies. This will result in decreasing real wage levels and rising unemployment. Capital markets, demanding higher risk premiums, will punish failures in necessary economic adjustments.

During the Greek Crisis in spring 2010, France led several euro member countries in criticizing Germany for its mercantilist export-led growth model. By keeping nominal wage increases below productivity gains, Germany forces other euro member countries into a spiral of wage deflation. Tables 7 and 8 show trade balances of euro member countries with respect to the world and other euro member countries. In 2008, Belgium, Finland, Germany, Ireland, and the Netherlands all showed surpluses in intra-euro trade; Germany has by far the highest trade surplus of \$263 billion, while Ireland has the biggest relative trade surplus with 22 percent of GDP. Belgium has a significant intra-euro trade surplus of \$23.5 billion, while its trade balance with the rest of the world shows a deficit of approximately \$17 billion. Austria shows the opposite pattern: the intra-euro balance is negative at \$25 billion, while the trade balance with the rest of the world shows a surplus of \$22.3 billion.

¹⁴We will return to this argument when discussing the exit option.

France has the largest intra-euro deficit of roughly \$110 billion; this deficit has increased every year since 1999, while its trade with the rest of the world is almost perfectly balanced. Amongst the Mediterranean countries, Italy has recorded a marginal intra-euro deficit and a modest overall deficit of around 1 percent of GDP since 1999. The remaining three Mediterranean members show a very similar pattern: very significant intra-euro deficits (Greece 8%, Portugal 9%, Spain 3%), and even higher overall trade deficits (Greece 18%, Portugal 14%, Spain 9%).

Germany's intra-euro surplus remained relatively stable at 2 percent of GDP, while the overall trade surplus increased significantly to 7 percent. In 1999, 45 percent of all exports went to other euro member states; this number decreased to 42 percent in 2008.

Tables 9 and 10 sketch the export performance of all euro member countries between 1999 and 2008, again within the euro area and with the world. Germany's share of all euro area exports grew from around 25 to slightly below 27 percent, while Germany's share of intra-euro exports as a percentage of its overall exports declines from above 44 to slightly below 43 percent.

The data analysis gives little reason to blame Germany for increased trade disequilibria in the euro area. Most of Germany's trade surpluses occur outside the euro area. The Mediterranean countries, with the exception of Italy, show high trade deficits with euro member countries and the outside world, reflecting a loss of international competitiveness and high domestic absorption.

Obviously, a solution for the sovereign debt burden for these countries alone will not address the fundamental issue of a dramatic loss in international competitiveness.

b) Bailout

Fiscal accounting inconsistencies and the revelation of dramatically higher current budget deficits have caused the Greek risk premium for capital to increase markedly. Greece's increased cost of capital has provoked a debate about the pros and cons of an intra-euro area bailout. Proponents of a bailout strategy fear uncontrolled spillover effects to other euro member countries, amplifying the crisis scenario. However, the direct financial bailout of a euro

member country by other members violates the spirit of the Stability and Growth Pact as well as the Treaty of Maastricht.¹⁵ The logic and justification for the bailout plan for Greece is to avoid a contagion effect, which would infect other euro member countries and jeopardize their ability to refinance their sovereign debt. Borrowing from banking crisis terminology, Greece is perceived as too big to fail.

This logic is flawed in at least two dimensions. First, the contagion effect applies to a scenario where fundamentally healthy countries are infected by the crisis in another country. The term economic contagion should not be used for the case when the market treats countries with similar economic fundamental disequilibria equally. Secondly, any bailout plan based on the argument of too big to fail must be credible. However, while the economies and sovereign debts of Greece and Portugal are relatively small, the bailout for countries like Spain or even Italy is beyond the budget constraint for all euro member countries. If a bailout of these countries is not in reach, a restructuring of their debt burden remains an option.

The justification for approaching the IMF as a partner in the bailout remains unclear. By principle, the IMF was designed under the Bretton Woods regime to assist countries by providing international liquidity (usually denominated in US\$) in cases of balance of payments turbulences, thereby providing some additional leeway for the country to realize the necessary domestic adjustments by means of fiscal and monetary policy. After the breakup of Bretton Woods, the IMF maintained this emergency lending function despite the absence of any binding international monetary arrangement. However, in the case of Greece, IMF lending instead has the sole purpose of financing the budget of a member state of the euro area, thus obviously not financing a balance of payments problem. In pursuing this path, the IMF effectively opens Pandora's Box for applications of a different type of lending, softening national budget constraints and fiscal discipline.

The bailout package for Greece comes with very strict conditions that will force Greece to follow a long-term austerity policy. The dramatic forced reduction in government expenditures is a very effective built-in destabilizer, most likely causing recession, reducing future government revenues, and further aggravating the Greek budget crisis. Therefore, it does not seem

¹⁵See Treaty, 124 and 125.

venturesome to predict that at the end of this process Greece will nevertheless choose debt restructuring as the appropriate solution. In other words, the bailout package is ineffective and only postpones a necessary debt restructuring.

The main argument against a bailout solution is that it will increase moral hazard behavior amongst euro member states and weaken their willingness to introduce painful necessary domestic adjustments. Fears, especially in Germany, of excessive deficit spending by some euro member states motivated the Stability and Growth Pact. These fears assumed that excessive deficit spending would require a bailout by either the European Central Bank, jeopardizing price stability, or by the tax payers of richer member states. The Pact and the non-bailout clause in the treaty sought to prevent fiscal profligacy by individual member states and the need to socialize the related bailout cost amongst euro area.

The economic literature is divided about the pros and cons of fiscal constraints, and numerical targets in particular.¹⁶ Restricted fiscal policy reduces the strength of built-in stabilizers and limits tax-smoothing and economic stimuli in times of recession.

Reference to the U.S. as a justification for the pact is misguided. Although 49 of 50 U.S. states have fiscal constraints in place (the exception is the state of Vermont), none of the restrictions originally intended to reduce inflationary risk for the dollar area. Rather, skepticism among citizens of the wisdom of politicians spending tax dollars motivated fiscal constraints. Further, various ways exist to circumvent these constraints, at least in the short-run, and to build up significant state debt levels. Sachs and Xavier Sala-i Martin (1992) show that the federal tax and transfer system compensates states for approximately 30 percent of revenue shortfalls during recessions.¹⁷

Eichengreen and von Hagen (1992) argue that a central government's incentive to restrict a given state's debt depends on its share of the tax base. The smaller the tax base of a state relative to its spending, the more difficult fiscal adjustments to shocks are; consequently, states might seek rescue in debt financing. In summary, the striking difference between the U.S. and the euro area is that the former monetary union never considered the option of a bailout on the

¹⁶See for discussion von Hagen, Juergen (1992), Eichengreen, Barry, and Juergen von Hagen (1995), Poterba, James M. (1996), and Corsetti, Giancarlo, and Nouriel Roubini (1996).

¹⁷As of end of 2009, all states have a debt level below 10 percent of state GDP.

state level. From this perspective, the Growth and Stability Pact seems ill designed; given their large domestic tax base, euro member states have sufficient opportunities to increase revenues or decrease spending to master fiscal problems. By unnecessarily adding the Pact to enforce the non-bailout clause, and then breaking the non-bailout promise at the first challenge for the system, the European monetary union has exposed itself to the worst of all options: a systemic bailout as part of the monetary arrangement.¹⁸

A bailout pact for the euro will spread the financing burden to all member states and hence increase financing costs. Contrary to the laissez-faire scenario, the rising risk premium for capital will be shared amongst all member states. This is of particular interest, because without further political unification, fiscal policy will remain largely on the national level, while the entire monetary union shares the financing costs. The electoral constituency of surplus countries will likely and increasingly oppose this path, especially when bailouts of individual member states do not prevent them from ultimately seeking debt restructuring and spreading such fears to other euro member states.

In this context, the bailout plan for Greece seems to be not only futile, but also economically detrimental. By sharing the Greek debt burden, all euro member countries now identify the need for reducing national fiscal deficits and government spending. Consequently, the economic growth within the euro countries will be negatively affected and economic recovery is hindered. The euro-wide crowding out effect for private investment will further impede economic growth.

By guaranteeing sovereign bonds of other euro member states, the surplus countries make purchases of such bonds a profitable and risk-free investment for banks, which might use these securities in refinancing operations with the European Central Bank. By extending its deadline for accepting lower-rated securities as collateral for open market operations, the ECB facilitates this channel. As a result, the wall between monetary and fiscal policy within the euro area becomes thinner. By buying sovereign debt with low ratings, the ECB contributes to the intermingling of the bailout for a member state and banks that invested in such securities.

¹⁸The Greek GDP in 2009 was approximately 2.6 percent of the economic output of all euro member countries. The combined share of Mediterranean countries of overall euro GDP is 33 percent. Italy has a share of roughly 1 percent, Spain 11.7 percent.

The bailout option can also be interpreted as a substitute for a missing common fiscal policy, i.e., a system of financial transfers amongst member states. As discussed in the previous section, a laissez-faire scenario would most likely lead to a rising labor migration from southern to northern member countries, putting pressure on the labor markets of the latter. Periodical bailouts or a system of fiscal transfers might be the alternatives to the labor migration scenario: the richer and more productive northern countries would finance the southern member countries in order to avoid migration.

c) Exit-option

Given the umbrella-like protection the euro has provided its member countries during the recent financial crisis, there are no incentives for a highly indebted member country to opt out of the monetary union. However, the data on macroeconomic fundamentals for euro member countries provided in section II of this paper provide evidence that several countries failed to introduce the fiscal and wage discipline needed to avoid significant macroeconomic disequilibria. The main advantage of the euro for a prospective member country - besides reputational benefits - is a significant decrease in the financing premium for sovereign and corporate bonds. Given a government debt of around 100 percent of GDP or more, a euro membership is worth 3-4 percent of GDP annually. In return, a nation abandons the nominal exchange rate as an easy-to-use instrument to compensate for domestic overspending. Entry into the European monetary union made financing of such overspending and the loss of competitiveness a simple task, accomplished through private capital inflows and the issuance of additional sovereign debt at low cost. But disparities within the euro area have reached levels that make markets question the sustainability of a historically unknown enterprise - the creation of a monetary union without a political union - and caused risk spreads to rise again.

The most important disadvantage of exiting the euro would be the reoccurrence of a currency premium on top of the default premium. In addition, the re-establishment of a national currency would cause a significant currency mismatch in national debt, converting existing euro debt into a foreign currency liability exposed to exchange rate risk. So from a financial viewpoint, the exit strategy would increase the cost of financing the national debt. An exit strategy consequently would demand as a first step a debt restructuring.

Clearly, no incentives exist for countries to exit the euro area as long as a bailout scenario is possible. The exit strategy is the alternative to a world of *laissez-fair*. Given the burden of a bailout for the surplus countries, it seems likely that opposition to such plans will form soon. This would leave the Mediterranean countries alone to master the burden of adjustment. The obvious advantage of an exit would be re-gaining the exchange rate as an adjustment instrument to reduce high unit labor costs and a loss in international competitiveness. With a history of currency devaluation, it does not seem improbable that a populist politician in a Mediterranean country will label the euro as the scapegoat responsible for domestic troubles and offer to lead the country back to independence of ECB patronage. From an economist's viewpoint, it reduces to the question: to what extent will nominal exchange rate changes have real effects?

The analysis above has shown that either the *laissez-faire* or the bailout strategy will come with significant costs for the northern euro member countries. The *laissez-faire* scenario eventually will cause an increase in labor migration from south to north, leaving the need for adjustment of northern countries' labor markets. The bailout scenario entails either frequent ad hoc interventions or a system of fiscal transfers from the northern to the southern euro member countries in order to avoid such labor migration. In this case, taxpayers throughout the euro zone will pay the bill. This latter scenario resembles the cases of Mezzogiorno in Italy and Eastern Germany, both regions that received massive fiscal transfers from richer regions in the country in order to avoid, or at least limit, labor migration, politically packaged as an act of patriotism and solidarity.¹⁹

It does not seem unlikely that voters in richer northern countries will not support such an intra-euro area transfer system. Given a lack of intra-euro patriotism, an organized exit of current surplus countries of the euro area, led by Germany, might become an option, leading to a new, smaller, and more coherent euro area with similar economic structures that might be able to achieve a monetary and fiscal union.

¹⁹It is worth mentioning that in both cases massive fiscal transfers were not able to avoid massive migration of particularly younger people to the rich north of Italy and West Germany.

IV. Conclusions

Three main factors contribute to the current tensions in the euro area: first, the adverse impact of low labor mobility on adjustment processes has been underestimated and amplified by differences in economic structures amongst member states. Secondly, by linking national bankruptcy with euro membership, enormous costs of bailouts are spread among all euro member countries who now share the burden of higher refinancing costs of national debt. Thirdly, by linking the bailout of a member state with the (national) bailout of banks invested in such securities, the potential bill has become enormous and undermines the will and capability of a bailout-guarantee for larger economies of the euro area.

The case of Greece is an interesting precursor of difficulties the euro area will face in the future. Fundamental macroeconomic data such as an unsustainable high current account deficit and rapidly rising nominal wages indicated already in 2009 that at some point Greece would come under market pressure, first visible in rising default risk spreads for its government debt relative to the German benchmark. The revision of past statistics and the current budget deficit aggravated the market pressure and finally triggered a full-blown economic crisis.

The crisis started as a liquidity emergency, with the Greek government asking for credit guarantees from other euro member countries to calm financial markets and secure a reduction in the risk spread to re-finance the government debt. Early credit guarantees promised a subsidized refinancing rate of 5 percent for Greek government debt. This development is surprising for at least two reasons. First, the euro members needlessly constructed a link between membership in the euro and fiscal distress. For example, in the U.S. sub-national districts are allowed to go bankrupt (Orange county to name a recent example) without debating the role of the dollar as legal tender. Greece never faced a balance of payments problem, but rather the threat of a debt default.

Second, the original bailout scenario ignored that Greece was already heading towards bankruptcy. Even under the most optimistic assumptions regarding the ability to reduce the primary deficit and GDP growth, Greece will not be able to avoid state bankruptcy. Providing subsidized interest rates for Greece government debt will not solve the problem, but merely postpones bankruptcy. Economies do not follow the economic logic of a firm; by dramatically

reducing government spending, Greece will fall into a vicious circle of declining real GDP and even higher debt burdens. A negative spiral of reduced euro-wide government spending and rising refinancing costs for private investment will most likely aggravate the crisis, and not end it.

Instead of allowing a market solution (*laissez-faire*) by having the burden be shared among market participants or trading Greek debt with a significant haircut, euro member countries decided to bailout both the Greek government and the euro area banks who are invested in Greek securities.

While the authors of this paper object to both bailouts, we find the link between bailing-out domestic financial institutions and the Greek government especially misguided; a bailout of banks could have been organized domestically without breaching the non-bailout promise of the Treaty. Furthermore, the bailout itself does not restore competitiveness to the Greek economy. Greece will face one or even two decades of fiscal austerity policies, and after all of this, the exit from the euro area might only be delayed. Markets immediately started to test the new rules by attacking Portuguese and Spanish government debt: the same game, but a bigger wheel. Pandora's Box has been opened. The recourse to the too big to fail case for financial institutions is misguided, because market participants know that no bailout package would be available when Spanish or Italian sovereign debt came under similar distress.

Discussions about the pros and cons of an exit strategy depend largely on the perspective. For the core euro member countries, the exit of some or all Mediterranean countries certainly would reduce potential fiscal burdens and also reduce pressure on the euro. Mediterranean countries face a trickier set of tradeoffs. Past experiences of other countries being able to re-establish international competitiveness through a real depreciation of domestic currency speak in favor of an exit strategy. This requires, of course, a non-complete pass-through of the change in the nominal exchange rate to the domestic price level. Opponents of an exit strategy also point to an additional currency risk premium that might make the way out of the economic mess even more difficult.

A survival of the euro area in its current form will either lead to a rising labor migration from the southern to northern countries to cause an adjustment process through labor markets

or a system of fiscal transfers from the northern to the southern countries to avoid or at least reduce labor migration within the euro area. Both strategies will come with high costs for the surplus countries.

Ultimately, the monetary history gives ample evidence of failures in forming monetary without a parallel political unification, in particular unification of fiscal policies.²⁰ The European Monetary Union might add another chapter of such a failure to history books.

²⁰See for examples and evidence Theurl, Theresia (1992), who discusses several attempts forming a monetary unification in Europe in the nineteenth century. Particularly the Latin Monetary union of 1865/6 shows surprising similarities with the current crises of the EMU. Two countries, Italy and Greece, flooded the Union with sovereign securities of low quality.

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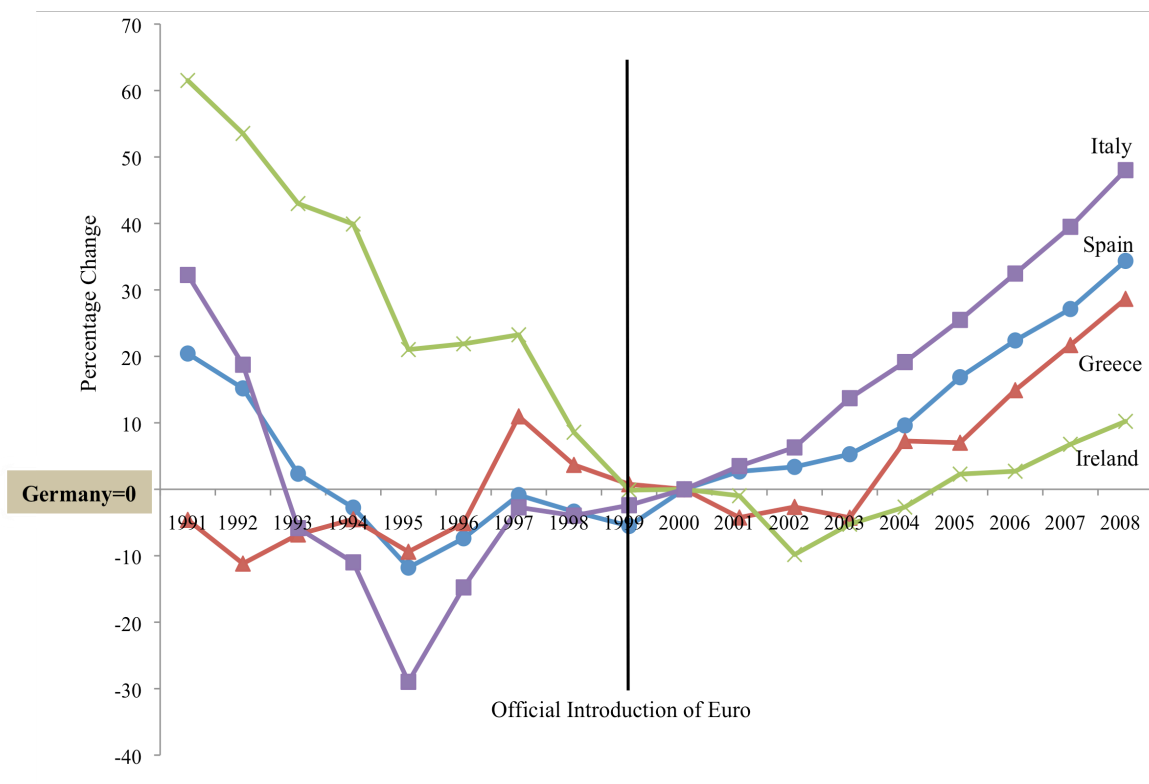
Statistical Appendix

Table 1: Cumulative Compound Inflation Table

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008
Austria	1.96	4.30	6.07	7.45	9.54	11.85	13.74	16.24	20.26
Belgium	2.68	5.18	6.82	8.43	10.44	13.24	15.89	17.99	23.47
Cyprus	4.86	6.94	9.93	14.29	16.45	18.83	21.50	24.13	29.89
Finland	2.95	5.69	7.81	9.21	9.36	10.21	11.62	13.39	17.81
France	1.83	3.64	5.65	7.94	10.47	12.57	14.72	16.56	20.54
Germany	1.40	3.33	4.73	5.81	7.71	9.77	11.73	14.27	17.63
Greece	2.90	6.66	10.83	14.64	18.11	22.22	26.27	30.05	35.77
Ireland	5.25	9.45	14.62	19.20	21.94	24.60	27.96	31.64	36.25
Italy	2.58	4.96	7.70	10.73	13.24	15.74	18.31	20.72	24.88
Luxembourg	3.20	5.99	8.21	10.38	12.80	15.62	18.71	21.45	25.95
Malta	3.04	5.63	8.38	10.48	13.49	16.36	19.36	20.19	24.63
Netherlands	2.34	7.57	11.68	14.18	15.75	17.49	19.43	21.33	24.89
Portugal	2.80	7.34	11.29	14.91	17.79	20.30	23.96	26.96	30.97
Slovenia	8.81	17.90	26.70	33.81	38.64	42.04	45.60	50.85	59.74
Spain	3.48	6.41	10.23	13.65	17.12	21.08	25.39	28.96	34.76

Source: OECD and authors' calculations

Figure 1: Annual Change in Unit Labor Cost



Source: OECD

Table 2: Competitive Positions: Relative Unit Labor Costs

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008
Austria	100.0	98.6	99.2	103.2	104.3	103.8	101.0	101.4	101.4
Belgium	100.0	102.4	104.4	110.4	111.0	111.0	111.0	112.7	110.0
Finland	100.0	99.3	97.6	100.3	100.0	98.2	92.5	88.1	89.2
France	100.0	98.7	100.5	102.6	104.7	103.7	104.7	106.6	107.7
Germany	100.0	98.5	100.6	105.2	104.9	100.4	97.2	95.1	93.2
Greece	100.0	94.3	97.9	100.9	112.2	107.4	112.1	116.8	121.8
Ireland	100.0	97.5	90.8	99.9	102.2	102.7	99.9	101.9	103.4
Italy	100.0	102.0	106.9	118.9	124.1	125.9	129.7	134.6	141.2
Luxembourg	100.0	105.8	106.9	113.3	113.8	118.7	122.5	127.5	131.5
Netherlands	100.0	101.9	106.4	115.7	117.0	115.1	114.0	116.6	120.9
Portugal	100.0	100.1	101.9	103.5	105.1	106.8	107.7	105.6	104.6
Slovak Republic	100.0	95.5	100.4	104.9	107.9	101.6	98.8	98.8	99.0
Spain	100.0	101.2	104.0	110.4	114.5	117.3	119.6	122.2	127.5
United Kingdom	100.0	97.5	100.2	96.9	102.2	101.0	103.2	105.8	93.5
United States	100.0	101.7	97.4	91.6	84.1	81.6	81.2	77.3	74.6

Source: OECD

Table 3: Nominal Labor Costs (Wages and Salaries) for Total Industry Excluding Construction

Country	Percentage change on previous period											
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Germany	1.2	2.2	3.0	2.8	2.7	1.9	2.2	2.1	1.5	2.6	2.3	3.3
Greece	9.0	4.9	0.9	6.3	5.4	6.6	5.4	10.0	4.9	5.3	5.4	14.7
Italy	4.8	2.2	2.5	1.3	4.0	2.9	3.9	3.0	2.7	3.2	2.8	5.6
Portugal	8.0	3.3	5.9	6.0	5.6	6.0	2.5	2.5	3.2	0.2	3.4	2.7
Spain	4.7	3.7	2.9	3.1	4.4	5.4	4.9	4.0	3.6	3.7	3.4	5.4

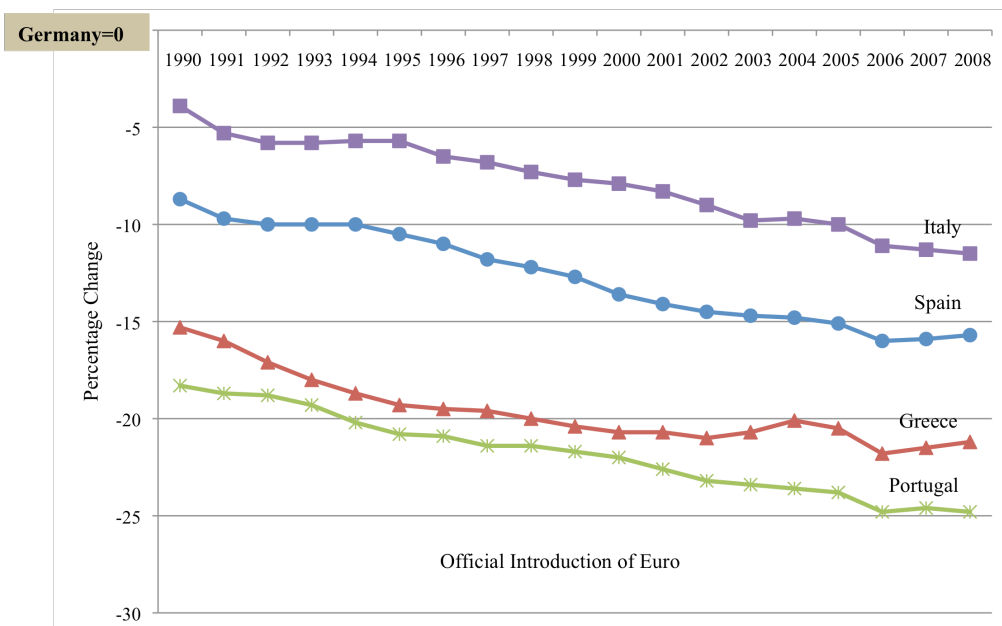
Source: Eurostat

Table 4: Current Account, Percentage of GDP

Country	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Germany	-1.2	-0.6	-0.5	-0.7	-1.3	-1.7	0.0	2.0	1.9	4.7	5.1	6.5	7.9	6.6
Greece	-2.2	-3.3	-3.5	-2.7	-3.6	-7.7	-7.2	-6.5	-6.5	-5.8	-7.5	-11.3	-14.4	-14.6
Italy	2.3	3.2	2.8	1.6	0.7	-0.5	-0.1	-0.8	-1.3	-0.9	-1.7	-2.6	-2.4	-3.4
Portugal	-0.1	-4.2	-5.9	-7.2	-8.5	-10.2	-9.9	-8.1	-6.1	-7.6	-9.5	-10.0	-9.4	-12.1
Spain	-0.3	-0.2	-0.1	-1.2	-2.9	-4.0	-3.9	-3.3	-3.5	-5.3	-7.4	-9.0	-10.0	-9.6

Source: Eurostat

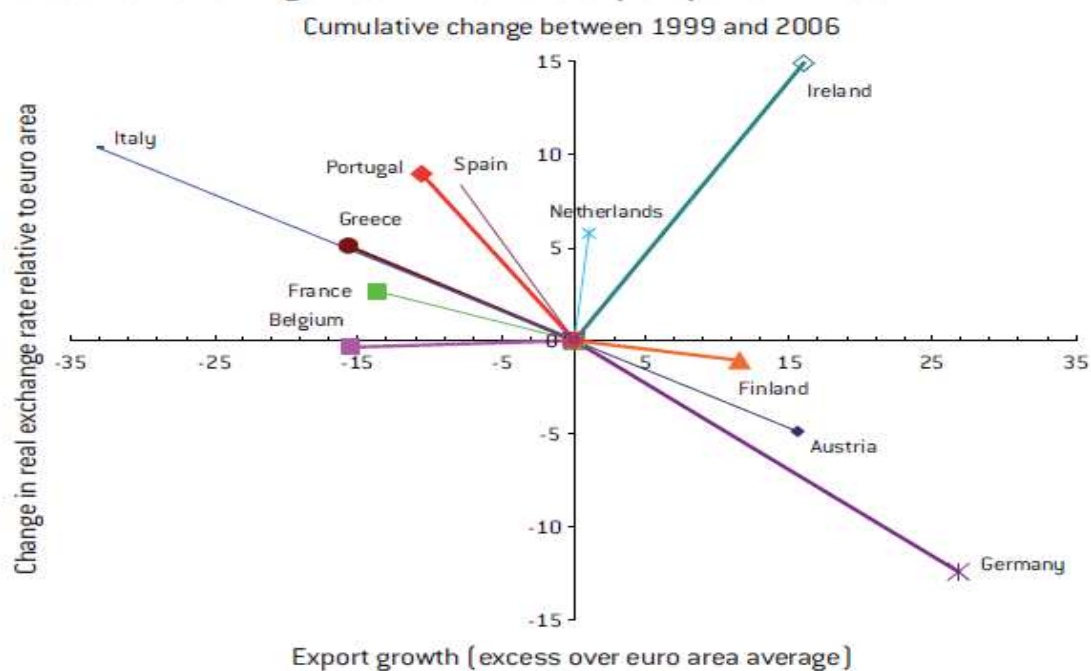
Figure 2: Labor Productivity



Source: OECD

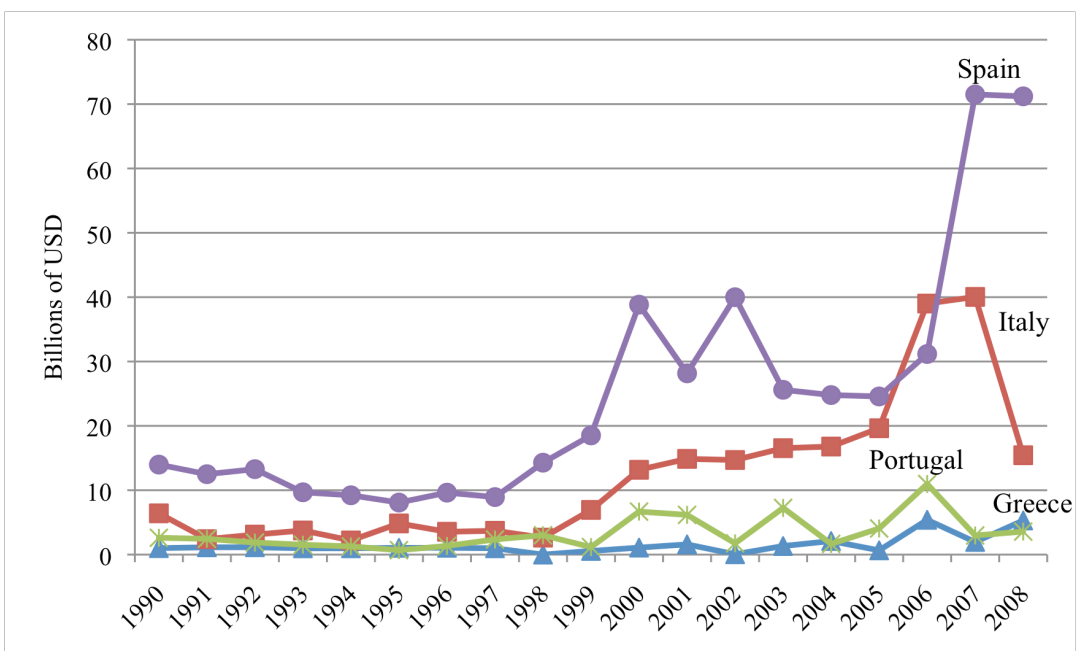
Figure 3: Real Exchange Rate and Relative Export Performance

Chart 2.8: Real exchange rate and relative export performance



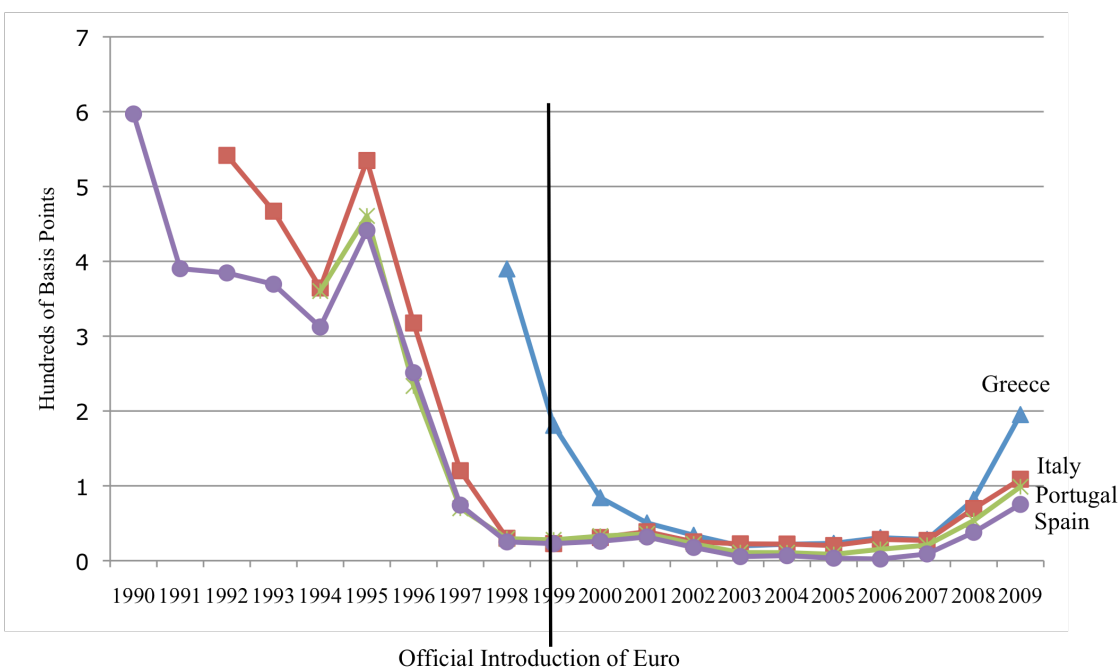
Source: Pisani-Ferry, Jean et al. (2008)

Figure 4: FDI Net Inflows



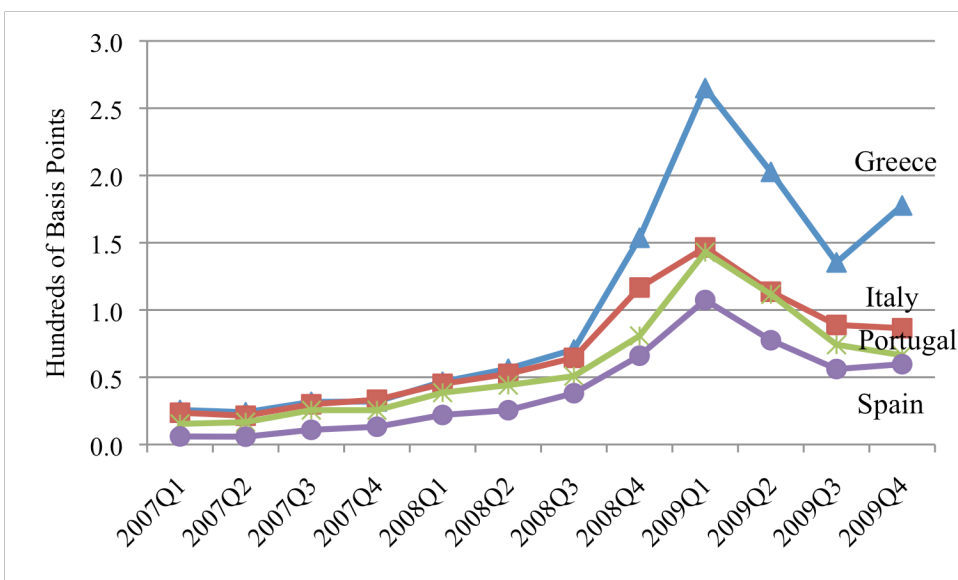
Sources: World Bank World Development Indicators & Global Development Finance

Figure 5: 10-year Bond Spread Relative to Germany



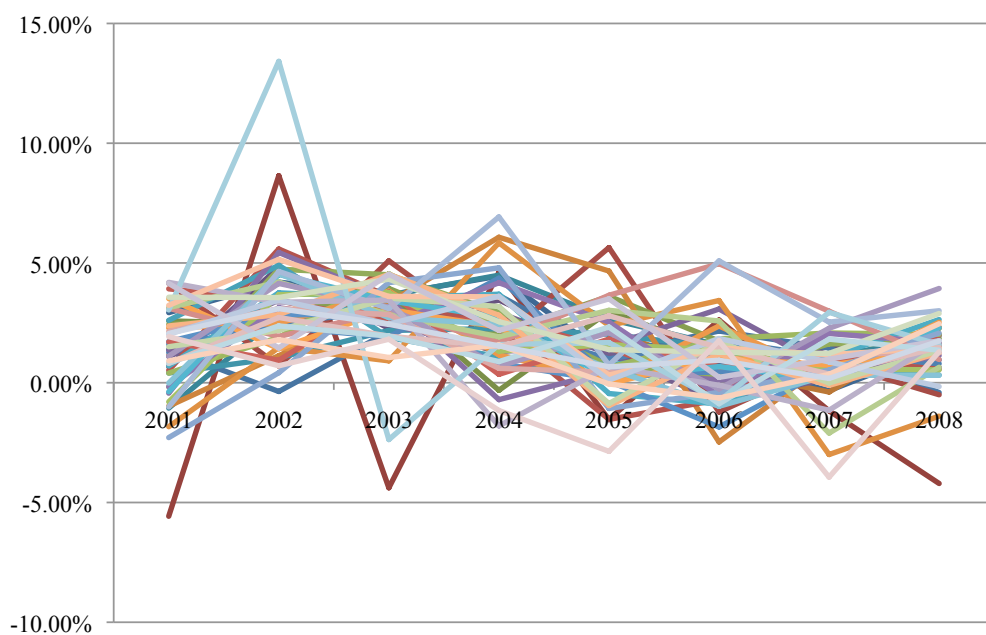
Source: OECD

Figure 6: 10-year Bond Spread Relative to Germany



Source: OECD

Figure 7: U.S. State Labor Productivity



Note: each line represents a different state.

Source: BEA, BLS

Table 5: US Annual Percent Change in Population

State	2001	2002	2003	2004	2005	2006	2007
Alabama	0.25	0.17	0.38	0.46	0.69	1.12	0.82
Alaska	0.93	1.49	1.29	1.64	1.17	1.20	0.89
Arizona	2.59	2.71	2.47	2.96	3.62	3.59	2.81
Arkansas	0.44	0.49	0.62	0.84	1.07	1.33	0.91
California	1.53	1.27	1.18	0.98	0.75	0.72	0.84
Colorado	2.44	1.66	1.05	1.19	1.40	1.98	2.00
Connecticut	0.52	0.64	0.61	0.26	0.13	0.27	0.19
Delaware	1.10	1.23	1.36	1.46	1.56	1.45	1.41
District of Columbia	1.02	0.27	-0.30	0.37	0.42	0.59	0.48
Florida	1.86	1.95	1.75	2.26	2.27	1.81	1.07
Georgia	2.32	2.01	1.73	2.08	2.09	2.57	2.17
Hawaii	0.58	0.84	0.94	1.12	1.07	0.87	0.37
Idaho	1.64	1.60	1.63	2.03	2.45	2.66	2.43
Illinois	0.62	0.49	0.37	0.43	0.31	0.45	0.59
Indiana	0.55	0.42	0.54	0.56	0.62	0.73	0.68
Iowa	0.06	0.04	0.17	0.34	0.33	0.57	0.52
Kansas	0.30	0.42	0.35	0.33	0.40	0.52	0.73
Kentucky	0.45	0.53	0.61	0.63	0.75	0.80	0.88
Louisiana	-0.20	0.12	0.18	0.32	0.17	-5.61	1.18
Maine	0.60	0.72	0.72	0.42	0.25	0.20	0.17
Maryland	1.21	1.10	1.11	0.79	0.64	0.52	0.29
Massachusetts	0.70	0.38	0.10	-0.08	-0.07	0.08	0.24
Michigan	0.52	0.37	0.31	0.27	0.05	-0.06	-0.30
Minnesota	1.01	0.73	0.63	0.66	0.55	0.80	0.83
Mississippi	0.18	0.20	0.32	0.65	0.47	-0.05	0.68
Missouri	0.63	0.61	0.52	0.68	0.75	0.86	0.70
Montana	0.31	0.46	0.79	1.01	0.98	1.18	1.17

Continued on next page

Table 5 – continued from previous page

State	2001	2002	2003	2004	2005	2006	2007
Nebraska	0.29	0.42	0.53	0.53	0.58	0.55	0.61
Nevada	3.81	3.45	3.26	4.09	3.39	3.47	2.93
New Hampshire	1.36	1.18	0.84	0.89	0.68	0.67	0.31
New Jersey	0.76	0.74	0.55	0.42	0.19	0.10	0.23
New Mexico	0.45	1.18	1.06	1.18	1.28	1.36	1.42
New York	0.42	0.29	0.39	0.26	0.02	0.10	0.08
North Carolina	1.53	1.41	1.22	1.39	1.65	2.19	2.16
North Dakota	-0.76	-0.40	-0.11	0.58	-0.14	0.24	0.35
Ohio	0.25	0.19	0.19	0.15	0.06	0.03	0.03
Oklahoma	0.31	0.60	0.41	0.47	0.55	1.18	1.11
Oregon	1.20	1.42	1.01	0.73	1.31	1.68	1.53
Pennsylvania	0.02	0.15	0.17	0.17	0.15	0.29	0.24
Rhode Island	0.73	0.79	0.54	0.02	-0.57	-0.48	-0.36
South Carolina	0.98	1.03	1.03	1.32	1.27	1.77	1.79
South Dakota	0.42	0.41	0.64	0.94	0.76	1.08	0.98
Tennessee	0.90	0.82	0.89	1.00	1.31	1.43	1.35
Texas	1.87	1.83	1.64	1.67	1.73	2.47	2.12
Utah	2.13	1.95	1.56	2.43	3.05	2.97	2.55
Vermont	0.38	0.49	0.30	0.27	0.15	0.17	0.08
Virginia	1.20	1.27	1.22	1.27	1.25	1.09	0.94
Washington	1.33	1.19	0.94	1.16	1.31	1.66	1.47
West Virginia	-0.45	0.07	0.17	0.08	0.06	0.17	0.18
Wisconsin	0.63	0.68	0.55	0.64	0.55	0.58	0.52
Wyoming	-0.19	0.85	0.44	0.78	0.65	1.23	1.96
Average	0.86	0.88	0.80	0.92	0.90	0.92	0.97

Source: Brookings Institute

Table 6: Country Annual Migration, as percentage of total population

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008
Austria	0.22	0.52	0.43	0.47	0.76	0.69	0.36	0.22	0.41
Belgium	0.14	0.35	0.39	0.34	0.34	0.49	0.51	0.59	0.60
Cyprus	0.57	0.67	0.98	1.73	2.15	1.92	1.13	0.95	0.08
Finland	0.05	0.12	0.10	0.11	0.13	0.17	0.20	0.26	0.29
France	0.28	0.30	0.30	0.31	0.17	0.15	0.14	0.48	0.12
Germany	0.20	0.33	0.27	0.17	0.10	0.10	0.03	0.05	-0.07
Greece	0.27	0.35	0.35	0.32	0.37	0.36	0.36	0.36	0.31
Ireland	0.84	1.02	0.84	0.79	1.18	1.61	1.59	1.07	0.41
Italy	0.09	0.09	0.60	1.07	0.96	0.55	0.64	0.84	0.73
Luxembourg	0.79	0.75	0.60	1.21	0.97	1.32	1.14	1.26	1.59
Malta	0.23	0.56	0.44	0.42	0.48	0.40	0.53	0.42	0.60
Netherlands	0.36	0.35	0.17	0.04	-0.06	-0.14	-0.16	-0.01	0.19
Portugal	0.46	0.63	0.68	0.61	0.45	0.36	0.25	0.18	0.09
Slovakia	-0.41	0.02	0.02	0.03	0.05	0.06	0.07	0.13	0.13
Slovenia	0.14	0.25	0.11	0.18	0.09	0.32	0.31	0.71	0.97
Spain	0.97	1.09	1.58	1.50	1.44	1.49	1.38	1.57	0.91
Average	0.32	0.46	0.49	0.58	0.60	0.62	0.53	0.57	0.46

Source: Eurostat

Table 7: Trade Balance with Euro Area, Billions USD

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Austria	-10.7	-9.1	-8.9	-6.7	-10.5	-16.1	-17.0	-17.8	-21.8	-25.0
Belgium	18.0	16.7	14.1	9.7	21.1	20.1	19.7	21.0	25.9	23.5
Cyprus	-1.2	-1.3	-1.5	-1.5	-1.8	-2.7	-2.8	-3.3	-4.2	-5.1
Finland	3.1	4.1	3.3	3.7	1.5	-0.7	-2.1	-1.5	-2.4	-3.2
France	-12.8	-20.3	-23.0	-21.7	-31.4	-41.9	-55.1	-57.6	-79.6	-101.1
Germany	38.2	36.3	39.8	55.4	74.8	103.6	112.8	65.9	91.7	81.3
Greece	-10.9	-9.8	-9.5	-10.8	-15.8	-19.6	-19.1	-21.0	-26.2	-29.2
Ireland	19.9	18.6	19.3	23.3	26.3	29.2	30.8	27.0	28.1	29.3
Italy	0.0	-3.9	-4.3	-8.0	-12.7	-15.4	-13.1	-14.5	-10.9	-6.0
Luxembourg	-2.6	-2.9	-1.5	-2.3	-2.1	-2.6	-1.8	-0.5	-3.5	-4.0
Malta	-0.7	-1.1	-1.3	-0.9	-1.2	-1.3	-1.4	-1.4	-1.6	-1.7
Netherlands	56.0	64.1	65.2	62.6	77.7	93.0	115.0	128.0	143.2	183.4
Portugal	-11.0	-10.0	-9.6	-9.8	-12.3	-13.8	-15.4	-15.6	-18.6	-22.6
Slovak Republic	-0.2	0.3	-0.3	-0.3	0.2	0.2	1.3	2.4	4.2	5.1
Slovenia	-1.0	-1.1	-1.2	-1.3	-1.9	-5.5	-3.3	-3.7	-4.1	-5.0
Spain	-15.5	-16.0	-15.1	-18.4	-27.2	-38.6	-44.1	-49.1	-63.0	-52.7

Source: IMF Direction of Trade Statistics

Table 8: Trade Balance with World, Billions USD

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Austria	-5.3	-4.7	-3.9	0.4	-2.4	-1.6	-2.1	-0.5	0.6	-2.8
Belgium	16.7	11.5	9.6	16.0	25.3	22.0	15.2	15.1	19.1	6.5
Cyprus	-2.6	-2.8	-3.1	-3.2	-3.6	-4.6	-4.8	-5.6	-7.2	-9.0
Finland	10.0	11.6	10.6	11.5	10.7	10.1	6.7	7.8	8.3	4.7
France	10.4	-8.3	-5.7	2.8	-6.6	-19.1	-40.9	-46.3	-68.3	-102.3
Germany	71.3	48.7	77.9	119.7	145.8	193.7	200.2	201.1	265.9	263.5
Greece	-17.5	-17.3	-18.5	-21.1	-31.5	-37.3	-37.1	-42.9	-52.8	-63.0
Ireland	24.1	25.7	32.3	36.4	39.0	43.1	41.1	35.8	37.7	41.5
Italy	14.9	1.4	8.1	8.2	2.0	-1.7	-11.7	-25.4	-11.5	-16.4
Luxembourg	-3.0	-3.1	-1.8	-3.0	-2.9	-3.8	-3.1	-3.7	-5.2	-6.3
Malta	-0.9	-1.0	-2.5	-0.6	-0.9	-1.2	-1.3	-1.5	-1.7	-1.9
Netherlands	12.2	14.0	22.2	24.4	31.2	37.7	42.8	46.8	58.4	57.1
Portugal	-15.4	-14.9	-14.0	-12.8	-15.5	-19.1	-23.0	-23.3	-26.8	-34.1
Slovak Republic	-2.2	-2.2	-3.6	-3.8	-3.0	-4.6	-2.7	-3.1	-2.2	-2.7
Slovenia	-1.4	-1.4	-0.9	-0.6	-1.1	-3.9	-1.1	-0.9	-1.5	-2.9
Spain	-31.4	-36.5	-33.7	-36.5	-53.4	-76.6	-97.0	-116.3	-137.5	-141.7

Source: IMF Direction of Trade Statistics

Table 9: Exports (f.o.b.) to Euro Area, Billions USD

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Austria	39.3	39.2	40.9	45.4	56.5	67.5	69.0	75.0	89.2	97.6
Belgium	110.7	117.3	119.9	130.7	159.2	197.8	212.8	231.8	270.3	300.5
Cyprus	0.2	0.2	0.2	0.2	0.2	0.3	0.6	0.5	0.5	0.6
Finland	15.0	15.9	14.2	14.8	17.6	18.8	19.5	23.4	27.4	29.2
France	163.4	161.9	160.2	165.2	203.0	230.5	229.5	251.8	275.4	296.4
Germany	244.3	248.8	252.6	267.9	330.7	408.1	434.9	479.2	576.6	617.6
Greece	5.1	4.5	3.9	3.8	6.0	6.7	7.3	9.1	10.4	11.0
Ireland	28.9	28.9	29.8	33.8	38.4	44.1	47.5	45.6	50.0	51.2
Italy	118.9	113.2	113.2	116.0	142.7	166.4	174.1	193.8	230.1	238.2
Luxembourg	6.2	6.1	7.6	7.5	9.8	12.1	13.4	16.4	15.8	18.3
Malta	0.8	0.6	0.8	0.7	0.8	0.9	0.9	1.1	1.1	1.0
Netherlands	142.6	148.4	149.3	154.4	189.6	225.3	255.5	289.6	336.1	397.9
Portugal	16.7	15.4	16.0	17.1	21.3	24.0	25.0	28.0	33.2	34.4
Slovak Republic	5.8	6.7	7.2	8.3	12.3	14.4	17.0	21.6	29.8	34.4
Slovenia	5.4	5.3	5.4	5.8	7.1	8.1	10.5	12.4	15.7	17.4
Spain	63.6	64.5	64.6	70.0	95.1	109.7	112.3	122.1	144.5	158.2

Source: IMF Direction of Trade Statistics

Table 10: Exports (f.o.b.) to World, Billions USD

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Austria	66.0	67.5	70.7	78.5	97.2	118.3	125.0	136.9	163.8	181.7
Belgium	174.6	186.6	188.1	213.5	250.3	307.9	334.3	366.8	431.1	473.9
Cyprus	1.0	0.9	1.0	0.8	0.9	1.2	1.5	1.3	1.4	1.6
Finland	42.4	45.9	43.3	44.8	53.2	61.6	65.4	77.3	90.1	96.8
France	323.9	323.5	322.9	331.1	392.1	451.8	463.0	495.5	551.9	602.4
Germany	535.6	549.0	570.6	613.3	742.3	911.9	977.1	1109.0	1322.8	1449.4
Greece	10.5	11.0	9.7	10.3	13.4	15.3	17.4	20.8	23.6	25.5
Ireland	71.6	76.3	82.9	87.8	92.8	104.4	109.6	108.9	121.5	125.6
Italy	235.1	236.7	240.8	251.2	299.9	353.6	373.0	417.2	500.4	539.9
Luxembourg	8.2	8.2	10.3	10.2	13.3	16.3	18.7	22.9	22.4	25.3
Malta	2.0	2.4	2.2	2.2	2.5	2.6	2.4	2.8	3.1	2.9
Netherlands	220.2	229.8	230.9	243.2	296.0	357.5	406.0	463.9	551.7	638.7
Portugal	24.5	23.3	23.9	25.5	31.7	35.8	38.1	43.4	51.5	56.1
Slovak Republic	10.2	11.9	12.6	14.4	20.4	24.9	31.8	42.0	58.7	71.2
Slovenia	8.5	8.7	9.2	10.4	12.7	14.5	19.2	23.3	30.1	34.2
Spain	103.7	108.2	109.0	118.2	155.4	181.8	192.1	212.8	252.1	281.0

Source: IMF Direction of Trade Statistics